



THE UNITED KINGDOM VEHICLE APPROVAL AUTHORITY

COMMUNICATION CONCERNING THE ~~APPROVAL GRANTED⁽⁴⁾~~ / APPROVAL EXTENDED⁽¹⁾ /
~~APPROVAL REFUSED⁽⁴⁾~~ / ~~APPROVAL WITHDRAWN⁽⁴⁾~~ / ~~PRODUCTION DEFINITELY~~
~~DISCONTINUED⁽⁴⁾~~ OF A COMPRESSION-IGNITION ENGINE TYPE OR FAMILY OF ENGINE
TYPES AS SEPARATE TECHNICAL UNITS WITH REGARD TO THE EMISSION OF POLLUTANTS
PURSUANT TO REGULATION NO. 96.03



Approval No: 96R-032742 H

Extension No: 08

Reason(s) for extension: To cover addition of new rating, engine code 58

1. Trade name or mark of the engine: Caterpillar Inc.
2. Engine type(s): C15 (CPXL15.2ESW)
 - 2.1. Engine family: CPXL15.2ESW
 - 2.2. Types included in the engine family: See Appendix 3 of Information Document
 - 2.3. Tested type of engine or the representative of the engine family: IND
3. Manufacturer's name and address:
Caterpillar Inc.
100 NE Adams
Peoria, Illinois 61629
USA
4. If applicable, name and address of manufacturer's representative: Not applicable
5. Maximum allowable intake depression: 3.7 kPa
6. Maximum allowable back pressure: 10.0 kPa

USS357966



7. Restriction of use (if any): None

8. Emission levels – final test results with DF: As before

	NRSC	NRTC
CO (g/kWh)	2.44	N/A (Power Band H approval)
HC (g/kWh)	0.08	N/A (Power Band H approval)
NO _x (g/kWh)	2.94	N/A (Power Band H approval)
PM (g/kWh)	0.068	N/A (Power Band H approval)

9. Engine submitted for test on: As before

10. Technical service responsible for conducting the approval test: Vehicle Certification Agency

11. Date of test report issued by that service: As before

12. Number of test report issued by that service: As before

13. Site of approval mark on the engine: Engine valve cover – on the Engine Emissions Control Label

14. Place: BRISTOL

15. Date: 10 AUGUST 2016

16. Signature:  D LAWLOR
Head of Technical Standards & Legislation

17. The following documents, bearing the approval number shown above, are annexed to this communication:

One copy of Annex 1A or Annex 1B to this Regulation completed and with drawings and diagrams referred to attached.

Any remarks: Approval to Supplement 0

(1) Strike out what does not apply.

APPENDIX 1

Test results

1. Information concerning the conduct of the test⁽¹⁾: As before
- 1.1. Reference fuel used for test
 - 1.1.1. Cetane number: 54.6
 - 1.1.2. Sulphur content: 0.02% by volume
 - 1.1.3. Density: 835 kg/m³
- 1.2. Lubricant
 - 1.2.1. Make(s): Caterpillar
 - 1.2.2. Type(s): DEO CH4 15W/40 CG/CH
(state percentage of oil mixture if lubricant and fuel are mixed): Not applicable
- 1.3. Engine driven equipment (if applicable): Not applicable
 - 1.3.1. Enumeration and identifying details: Not applicable
 - 1.3.2. Power absorbed at indicated engine speeds (as specified by the manufacturer): Not applicable

	<i>Power P_{AE} (kW) absorbed at various engine speeds ^(a), taking into account Annex 7</i>	
<i>Equipment</i>	<i>Intermediate (if applicable)</i>	<i>Rated</i>
Total:		

^(a) Shall not be greater than 10 per cent of the power measured during the test.

1.4 Engine performance

1.4.1 Engine speeds:

Idle: 700 min⁻¹Intermediate: 1400 min⁻¹Rated: 1800 min⁻¹1.4.2 Engine power ⁽²⁾

	<i>Power setting (kW) at various engine speeds</i>	
<i>Condition</i>	<i>Intermediate (if applicable)</i>	<i>Rated</i>
Maximum power measured on test (P _m) (kW) (a)	369.08	433.55
Total power absorbed by engine driven equipment as per paragraph 1.3.2 of this Appendix or Annex 7 (kW) (b)	0	0
Net engine power as specified in paragraph 2.1.41. (kW) (c)	369.08	433.55
c = a + b	369.08	433.55

2. Information concerning the conduct of the NRSC test: As before

2.1. Dynamometer setting (kW)

	<i>Dynamometer setting (kW) at various engine speeds</i>	
<i>Per cent load</i>	<i>Intermediate (if applicable)</i>	<i>Rated</i>
10 (if applicable)	NA	43.35
25 (if applicable)	NA	NA
50	184.54	216.77
75	276.81	325.16
100	369.08	433.55

2.2. Emission results of the ~~ENGINE~~/PARENT ENGINE ⁽³⁾

Deterioration factor (DF): ~~CALCULATED/FIXED~~ ⁽³⁾

Specify the DF values and the emission results in the following table ⁽³⁾:

<i>NRSC Test</i>				
	CO	HC	NO _x	PM
DF mult/add ⁽³⁾	0.27	0.0	0.0	0.006
Emissions:	CO (g/kWh)	HC (g/kWh)	NO _x (g/kWh)	PM (g/kWh)
Test result	2.17	0.08	2.94	0.062
Final test result with DF	2.44	0.08	2.94	0.068

2.3. Sampling system used for NRSC test:

2.3.1. Gaseous emissions⁽⁴⁾: Figure 2

2.3.2. PM⁽⁴⁾: Figure 14

2.3.2.1. Method⁽³⁾: SINGLE/MULTIPLE FILTER

3. Information concerning the conduct of the NRTC test⁽⁵⁾: Not applicable

3.1 Emission results of the ENGINE/PARENT ENGINE⁽³⁾ : Not applicable

Deterioration factor (DF): CALCULATED/FIXED⁽³⁾ : Not applicable

Specify the DF values and the emission results in the following table⁽³⁾: Not applicable

NRTC Test				
	CO	HC	NO _x	PM
DF mult/add ⁽³⁾				
Emissions:	CO (g/kWh)	HC (g/kWh)	NO _x (g/kWh)	PM (g/kWh)
Cold start				
Emissions:	CO (g/kWh)	HC (g/kWh)	NO _x (g/kWh)	PM (g/kWh)
Hot start w/o regeneration				
Hot start with regeneration ⁽³⁾				
K _{r,u} (mult/add) ⁽³⁾ K _{r,d} (mult/add) ⁽³⁾				
Weighted test results				
Final test result with DF				

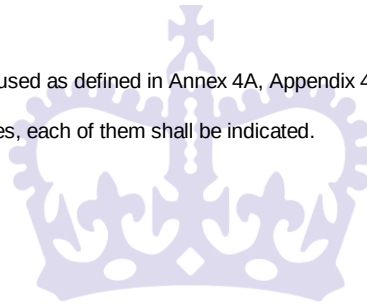
3.2. Sampling system used for NRTC test: Not applicable

Gaseous emissions⁽⁴⁾:

Particulates⁽⁴⁾:

Method⁽³⁾: SINGLE/MULTIPLE FILTER

- (1) For the case of several parent engines, the following are to be indicated for each of them.
- (2) Uncorrected power measured in accordance with paragraph 2.1.41.
- (3) Delete as appropriate.
- (4) Indicate figure numbers of system used as defined in Annex 4A, Appendix 4.
- (5) In the case of several parent engines, each of them shall be indicated.



September 7, 2016

Mr. Chuck Gepper
VCA North America
47 Samaritan Avenue
Ashland, OH 44805

Subject: Addendum to Type Approval No. E11 96R-032742 H

Dear Mr. Gepper:

Caterpillar Inc. requests addendum ECE Regulation No. 96 (up to and including the 03 series of amendments) Type Approval No. E11 96R-032742 H, reference Engine Family designation CPXL15.2ESW. The complete rating documentation table shown on Appendix includes the following updates highlighted in bold italics:

- Addition of a new rating, engine code 58.

The new rating was tested, and conform to the Stage IIIA standards for category H engines set forth in Section 5.2.1 of R96-03.

Please contact me if you have any questions regarding the enclosed information.

Sincerely,



/ CTV

Gregory D. Hoenert
Manager, Global Emissions Certification
Large Power Systems Division (MOS 11)
Caterpillar Inc.

Telephone: (309) 578-4868
Hoenert_Gregory_D@Cat.com

Enclosures

	Engine Family	CPXL15.2ESW
1.	General	
1.1	Make (Name of undertaking)	Caterpillar Inc.
1.2	Type and comm. descrip. of parent and family engines	C15 or 2506D
1.3	Manuf. type coding	Engine Family CPXL15.2ESW
1.4	Spec. of mach. to be propelled by engine	Up to 6 alphanumeric characters
1.5	Name and address of Manufacturer	Nonroad
	Nm. and addr. Of manuf. Authorized rep. (if any)	Caterpillar Inc. 100 NE Adams Peoria, IL 61629 USA
1.6	Loc., coding and method of affixing of the eng. iden. num.	NA
1.7	Loc. and method of affixing of the EC appr. Mark	Engine Identification number on the following: on the valve cover – printed on the polyester Engine Emissions Control label; on the side of engine labels – printed on the polyester Engine Information label; and stamped on the metal tag.
1.8	Address(es) of assembly plant(s)	Engine valve cover – on the Engine Emissions Control label - pressure sensitive adhesive polyester label
	Attachments	
1.1	Essential charac-teristics of the parent engine(s)	Seguin Engine Plant 940 Best Drive Seguin, Texas 78155
1.2	Essential charac-teristics of the engine family	see Appendix 1
1.3	Essential charac-teristics of engine types within the family	see Appendix 2
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)	see Appendix 3
3.	Photographs of the parent engine	N/A
4.	Any further attach-ments, if any:	See attachment

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	IND Parent	D8R (1)	IND (2)	365C (3)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	1686	1686	1687	1688
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1800	1850	2100	1800
1.9	Max. torque speed (rpm):	1400	1300	1400	1400
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1:1:1	1:1:1	1:1:1	1:1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	980	925	940	937
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	RM500 (4)	IND (5)	IND (5A)	IND (5B)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	1695	1696	13139	39916
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	2000	2100	2100	2100
1.9	Max. torque speed (rpm):	1400	1400	1400	1400
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1.1:1	1.1:1	1.1:1	1.1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	957	958	958	958
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	IND (5C)	IND (6)	IND (6A)	IND (6B)
1.1	Manufacturer:	Caterpillar Inc. branded as Perkins	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc. branded as Perkins
1.2	Manufac. engine code:	48880	1697	13140	48905
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	2100	2100	2100	2100
1.9	Max. torque speed (rpm):	1400	1400	1400	1400
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1.1:1	1.1:1	1.1:1	1.1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	958	975	975	975
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrp. of engine	IND (7)	IND (7A)	IND (7B)	824/5/6H (8)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc. branded as Perkins	Caterpillar Inc.
1.2	Manufac. engine code:	1698	13141	48918	1699
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	2100	2100	2100	1800
1.9	Max. torque speed (rpm):	1400	1400	1400	1250
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1.1:1	1.1:1	1.1:1	1.1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	980	980	980	902
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
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1.1	Essential charac-teristics of the parent engine(s)
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1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	824/5/6H (9)	735 (10)	735 (11)	735 (12)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	1700	1701	1702	1703
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1800	1900	1700	1700
1.9	Max. torque speed (rpm):	1250	1200	1200	1200
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1:1:1	1:1:1	1:1:1	1:1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	892	911	946	927
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	735 (13)	627G (14)	627G (15)	980H (16)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	1704	1705	1706	1707
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1700	1800	1800	1800
1.9	Max. torque speed (rpm):	1200	1200	1200	1200
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1:1:1	1:1:1	1:1:1	1:1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	925	927	884	886
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	980H (17)	D8T (18)	IND (19)	IND (20)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	1708	1709	1711	1712
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1800	1850	2100	2100
1.9	Max. torque speed (rpm):	1200	1300	1400	1400
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1.1:1	1.1:1	1.1:1	1.1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	880	919	906	948
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	583T (21)	657G (22)	657G (23)	587T (24)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	1714	1724	1725	1735
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1850	1800	1800	1800
1.9	Max. torque speed (rpm):	1300	1300	1300	1200
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1:1:1	1:1:1	1:1:1	1:1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	915	930	903	926
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	980H (25)	980H (26)	980H (27)	980H (28)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	1736	1739	1740	1741
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1800	1800	1800	1800
1.9	Max. torque speed (rpm):	1200	1200	1200	1200
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1.1:1	1.1:1	1.1:1	1.1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	914	917	906	907
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	980H (29) Caterpillar Inc.	IND (30) Caterpillar Inc.	IND (31) Caterpillar Inc.	365D (32) Caterpillar Inc.
1.1	Manufacturer:	1742	1743	1745	10869
1.2	Manufac. engine code:	4 stroke	4 stroke	4 stroke	4 stroke
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	137.2	137.2	137.2	137.2
1.4	Bore (mm):	171.4	171.4	171.4	171.4
1.5	Stroke (mm):	6	6	6	6
1.6	Number and layout of cylinders:	15200	15200	15200	15200
1.7	Engine capac. (cm ³):	1800	2100	2100	1800
1.8	Rated speed (rpm):	1200	1400	1400	1350
1.9	Max. torque speed (rpm):	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.10	Volumetric compression ratio ⁽¹⁾ :	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.11	Combustion system description:	See attachment	See attachment	See attachment	See attachment
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1.1:1	1.1:1	1.1:1	1.1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA	NA	NA	NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	903	946	936	966
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
1.15.6	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
1.15.6	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	365D (33)	980H (34)	980H (35)	980H (36)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	1748	10849	10850	11097
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1800	1800	1800	1800
1.9	Max. torque speed (rpm):	1400	1200	1200	1200
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1.1:1	1.1:1	1.1:1	1.1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	940	970	956	956
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	980H (37)	740 (38)	740 (39)	770 (40)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	11098	11095	11094	11382
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1800	1800	1700	1800
1.9	Max. torque speed (rpm):	1200	1200	1200	1300
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1:1:1	1:1:1	1:1:1	1:1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	947	989	992	971.5
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	770 (41)	735 (42)	IND (43)	PL83 (44)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	11383	11430	11674	11901
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1800	1800	2100	1850
1.9	Max. torque speed (rpm):	1300	1350	1400	1300
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1.1:1	1.1:1	1.1:1	1.1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	934	962	993	914
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	PL87 (45)	R2900 (46)	R2900 (47)	R2900 (48)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	11902	1733	1690	1689
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1800	1900	1900	1800
1.9	Max. torque speed (rpm):	1200	1425	1425	1350
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1.1:1	1.1:1	1.1:1	1.1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	926	930	869	867
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	AD30 (49)	R3000 (50)	374F (51)	RM500B (52)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	1710	12109	13885	20519
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1800	1800	1600	2000
1.9	Max. torque speed (rpm):	1200	1200	1400	1400
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1.1:1	1.1:1	1.1:1	1.1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	925	925	905	956
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine	820K (53)	735C (54)	986H (55)	PL83 / PL87 (56)
1.1	Manufacturer:	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.2	Manufac. engine code:	14789	13006	39845	32168
1.3	Cycle: four stroke / two stroke ⁽²⁾ :	4 stroke	4 stroke	4 stroke	4 stroke
1.4	Bore (mm):	137.2	137.2	137.2	137.2
1.5	Stroke (mm):	171.4	171.4	171.4	171.4
1.6	Number and layout of cylinders:	6	6	6	6
1.7	Engine capac. (cm ³):	15200	15200	15200	15200
1.8	Rated speed (rpm):	1800	1800	1800	1850
1.9	Max. torque speed (rpm):	1300	1350	1350	1300
1.10	Volumetric compression ratio ⁽¹⁾ :	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1	18.0 ± 0.5:1
1.11	Combustion system description:	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.12	Drwg of comb. chamber and piston	See attachment	See attachment	See attachment	See attachment
1.13	Min cross sect. area of inlet and outlet ports:	See attachment	See attachment	See attachment	See attachment
1.14	Cooling system				
1.14.1	Liquid				
1.14.1.1	Nature of liquid:	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture	Water/glycol mixture
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.14.1.3	Charac. or make(s) and type(s) (if appl.):	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.14.1.4	Drive ratio(s) (if applicable):	1:1:1	1:1:1	1:1:1	1:1:1
1.14.2	Air				
1.14.2.1	Blower: yes/no ⁽²⁾	No	No	No	No
1.14.2.2	Charac. or make(s) and type(s) (if appl.):	NA	NA	NA	NA
1.14.2.3	Drive ratio(s) (if applicable):	NA	NA	NA	NA
1.15	Temp. permitted by the manufac.				
1.15.1	Liquid cooling: Max. temp. at outlet (K):	377	377	377	377
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):	NA NA	NA NA	NA NA	NA NA
1.15.3	Max temp of the inlet intrclr (if app) (K):	323	323	323	323
1.15.4	Max exhst temp at exit of exhst mnfld. (K):	884	930	930	850
1.15.5	Fuel temp. (K): min:	NA	NA	NA	NA
	Fuel temp. (K): max:	352	352	352	352
1.15.6	Lube temp. (K): min:	NA	NA	NA	NA
	Lube temp. (K): max:	383	383	383	383



	Engine Family
1.	General
1.1	Make (Name of undertaking)
1.2	Type and comm. descrip. of parent and family engines
1.3	Manuf. type coding
1.4	Spec. of mach. to be propelled by engine
1.5	Name and address of Manufacturer
	Nm. and addr. Of manuf. Authorized rep. (if any)
1.6	Loc., coding and method of affixing of the eng. iden. num.
1.7	Loc. and method of affixing of the EC appr. Mark
1.8	Address(es) of assembly plant(s)
	Attachments
1.1	Essential charac-teristics of the parent engine(s)
1.2	Essential charac-teristics of the engine family
1.3	Essential charac-teristics of engine types within the family
2.	Characteristics of engine-related parts of the mobile machinery (if applicable)
3.	Photographs of the parent engine
4.	Any further attach-ments, if any:

Appendix 1 - ESSENTIAL CHARACTERISTICS OF THE (PARENT) ENGINE

Appendix 3 - ESSENTIAL CHARACTERISTICS OF ENGINE TYPE WITHIN THE FAMILY

1.	Descrip. of engine
1.1	Manufacturer:
1.2	Manufac. engine code:
1.3	Cycle: four stroke / two stroke ⁽²⁾ :
1.4	Bore (mm):
1.5	Stroke (mm):
1.6	Number and layout of cylinders:
1.7	Engine capac. (cm3):
1.8	Rated speed (rpm):
1.9	Max. torque speed (rpm):
1.10	Volumetric compression ratio ⁽¹⁾ :
1.11	Combustion system description:
1.12	Drwg of comb. chamber and piston
1.13	Min cross sect. area of inlet and outlet ports:
1.14	Cooling system
1.14.1	Liquid
1.14.1.1	Nature of liquid:
1.14.1.2	Circulating pump(s): yes/no ⁽²⁾
1.14.1.3	Charac. or make(s) and type(s) (if appl.):
1.14.1.4	Drive ratio(s) (if applicable):
1.14.2	Air
1.14.2.1	Blower: yes/no ⁽²⁾
1.14.2.2	Charac. or make(s) and type(s) (if appl.):
1.14.2.3	Drive ratio(s) (if applicable):
1.15	Temp. permitted by the manufac.
1.15.1	Liquid cooling: Max. temp. at outlet (K):
1.15.2	Air cooling: Ref. pt.: Max. temp. at reference point (K):
1.15.3	Max temp of the inlet intrclr (if app) (K):
1.15.4	Max exhst temp at exit of exhst mnfld. (K):
1.15.5	Fuel temp. (K): min:
	Fuel temp. (K): max:
1.15.6	Lube temp. (K): min:
	Lube temp. (K): max:

770G (57)	<i>IND (58)</i>
Caterpillar Inc.	<i>Caterpillar Inc.</i>
11851	29899
4 stroke	4 stroke
137.2	137.2
171.4	171.4
6	6
15200	15200
1800	1800
1300	1400
18.0 ± 0.5:1	18.0 ± 0.5:1
Direct Injection	Direct Injection
See attachment	See attachment
See attachment	See attachment
Water/glycol mixture	Water/glycol mixture
Yes	Yes
Caterpillar Inc. - gear driven centrifugal	Caterpillar Inc. - gear driven centrifugal
1.1:1	1.1:1
No	No
NA	NA
NA	NA
377	377
NA	NA
NA	NA
323	323
850	940
NA	NA
352	352
NA	NA
383	383



1.	Descrip. of engine	IND	D8R	IND	365C
1.16	Press. charg.: y/n ⁽²⁾	Parent	(1)	(2)	(3)
1.16.1	Make:	Yes	Yes	Yes	Yes
1.16.2	Type:	Garrett	Honeywell	Honeywell	Honeywell
		2399988	3808711	2367659	3808712
		2400003		2514880	
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117

1.	Descrip. of engine	RM500	IND	IND	IND
1.16	Press. charact. vin ⁽²⁾	(4)	(5)	(5A)	(5B)
1.16.1	Make:	Yes	Yes	Yes	Yes
1.16.2	Type:	Honeywell	Honeywell	Honeywell	Honeywell
			2400003	2400003	2400003
		3619712	2520804	2520804	2520804
			3619712	3619712	3619712
			3620846	3620846	3620846
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117



1.	Descrip. of engine	IND (5C)	IND (6)	IND (6A)	IND (6B)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:	2400003 2520804 3619712 3620846	2400003 2520804 3619712 3620846	2400003 2520804 3619712 3620846	2400003 2520804 3619712 3620846
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117

1.	Descrip. of engine	IND (7)	IND (7A)	IND (7B)	824/5/6H (8)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:	2400003 2520804 3619712 3620846	2400003 2520804 3619712 3620846	2400003 2520804 3619712 3620846	3827899
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117

1.	Descrip. of engine	824/5/6H (9)	735 (10)	735 (11)	735 (12)
1.16	Press. charact. vin ⁽⁹⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3827899	3620857	3620857	3620857
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117



1.	Descrip. of engine	735 (13)	627G (14)	627G (15)	980H (16)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3620857	3808708	3808708	3827898
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117



1.	Descrip. of engine	980H (17)	D8T (18)	IND (19)	IND (20)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3827898	3808711	2367659 2514880 3620855	3014296
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117

1.	Descrip. of engine	583T (21)	657G (22)	657G (23)	587T (24)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3808711	3808713	3808713	3808711
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117

1.	Descrip. of engine	980H (25)	980H (26)	980H (27)	980H (28)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3827898	3827897	3827897	3827897
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117



1.	Descrip. of engine	980H (29)	IND (30)	IND (31)	365D (32)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3827897	3014296	3014296	3808712
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117



1.	Descrip. of engine	365D (33)	980H (34)	980H (35)	980H (36)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3808712	3827901 3827897	3827901 3827897	3827901 3827897
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117



1.	Descrip. of engine	980H (37)	740 (38)	740 (39)	770 (40)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3827901 3827897	3620856	3620856	3808699
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117

1.	Descrip. of engine	770 (41)	735 (42)	IND (43)	PL83 (44)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:			2400003 2520804 3619712 3620846	3808711
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117



1.	Descrip. of engine	PL87 (45)	R2900 (46)	R2900 (47)	R2900 (48)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3808711	3963874	3963874	3963874
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117

1.	Descrip. of engine	AD30 (49)	R3000 (50)	374F (51)	RM500B (52)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3827900	3756145	4185210	4419561
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117

1.	Descrip. of engine	820K (53)	735C (54)	986H (55)	PL83 / PL87 (56)
1.16	Press. char. - vin ⁽²⁾	Yes	Yes	Yes	Yes
1.16.1	Make:	Honeywell	Honeywell	Honeywell	Honeywell
1.16.2	Type:				
		3927914 3927918	3620853	4172663	4830845
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10	10	10
2.	Measures taken against air pollution				
2.1	Device for recycling crankcase gases: yes/no	No	No	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.1.1	Make:	NA	NA	NA	NA
2.2.1.2	Type:	NA	NA	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA	NA	NA
2.2.1.7	Relative concentration:	NA	NA	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA	NA	NA
2.2.1.9	Cell density:	NA	NA	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.2.1	Make:	NA	NA	NA	NA
2.2.2.2	Type:	NA	NA	NA	NA
2.2.2.3	Location	NA	NA	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA	NA	NA
2.2.6	Other systems: yes/no	NA	NA	NA	NA
2.2.6.1	Description and operation:				
3.	Fuel feed				
3.1	Feed pump				
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117	550 ± 117	550 ± 117



1.	Descrip. of engine	770G	IND
1.16	Press. charact. ⁽²⁾	(57)	(58)
1.16.1	Make:	Yes	Yes
1.16.2	Type:	Honeywell	Honeywell
		3808701	2367659
1.16.3	Descrip. of syst. (eg. max press, if appl.):	Exhaust driven centrifugal	Exhaust driven centrifugal
1.16.4	Intercooler: yes/no ⁽²⁾	Yes	Yes
1.17	Maximum inlet restr. (kPa)	3.7	3.7
1.18	Max exhst backpress. (kPa)	10	10
2.	Measures taken against air pollution		
2.1	Device for recycling crankcase gases: yes/no	No	No
2.2	Add. anti-poll. dev.-Descrip. and/or diag:	NA	NA
2.2.1	Catalytic converter: yes/no ⁽²⁾	NA	NA
2.2.1.1	Make:	NA	NA
2.2.1.2	Type:	NA	NA
2.2.1.3	Number of catalytic converters and elements	NA	NA
2.2.1.4	Dimensions and volume of the catalytic converter:	NA	NA
2.2.1.5	Type of catalytic action:	NA	NA
2.2.1.6	Total charge of precious metals:	NA	NA
2.2.1.7	Relative concentration:	NA	NA
2.2.1.8	Substrate (structure and material):	NA	NA
2.2.1.9	Cell density:	NA	NA
2.2.1.10	Type of casing for the catalytic converter(s):	NA	NA
2.2.1.11	Location of the catalytic converter(s) (places and max/min distances from engine):	NA	NA
2.2.1.12	Normal operating range (K):	NA	NA
2.2.1.13	Consumable reagent (where appropriate):	NA	NA
2.2.1.13.1	Type and concentration of reagent needed for catalytic action:	NA	NA
2.2.1.13.2	Normal operational temperature range of reagent (K):	NA	NA
2.2.1.13.3	International standard (where appropriate):	NA	NA
2.2.1.14	NOx sensor: yes/no ⁽²⁾	NA	NA
2.2.2	Oxygen sensor: yes/no ⁽²⁾	NA	NA
2.2.2.1	Make:	NA	NA
2.2.2.2	Type	NA	NA
2.2.2.3	Location	NA	NA
2.2.3	Air injection: yes/no ⁽²⁾	No	No
2.2.3.1	Type (pulse air, air pump, etc.):	NA	NA
2.2.4	EGR: yes/no ⁽²⁾	NA	NA
2.2.4.1	Characteristics (cooled/uncooled, high pressure/low pressure, etc.):	NA	NA
2.2.5	Particulate trap: yes/no	NA	NA
2.2.5.1	Dimensions and capacity of the particulate trap	NA	NA
2.2.5.2	Type and design of the particulate trap	NA	NA
2.2.5.3	Location (places and max/min distance(s) from engine):	NA	NA
2.2.5.4	Method or system of regeneration, description, and/or drawing:	NA	NA
2.2.5.5	Normal operating temperature (K) and pressure (kPa) range:	NA	NA
2.2.6	Other systems: yes/no	NA	NA
2.2.6.1	Description and operation:		
3.	Fuel feed		
3.1	Feed pump		
	Pressure ⁽¹⁾ and/or char. diagram (kPa):	550 ± 117	550 ± 117

1.	Descrip. of engine	IND Parent	D8R (1)	IND (2)	365C (3)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 2530616	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	rated mm3	318	200	249	246
b	rated rpm	1800	1850	2100	1800
c	pk tq mm3	398	297	333	320
d	pk tq rpm	1400	1300	1400	1400
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 2530616	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 2409682	Electronics group part no. 2177931	Electronics group part no. 3674112	Electronics group part no. 2358222
3.2.4.3	Spd. where cut-off st. und. full lld (rpm) ⁽¹⁾ :	2100 ± 10	1850 ± 10	2100 ± 10	1800 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2310 ± 10	2200 ± 10	2310 ± 10	1980 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	700	700	700	900
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	Parent	1686	1687	1688
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	1850	2100	1800
d	Fuel del. per stroke @ rated (mm3)	318	200	249	246
e	Rated Net Power (kW)	444	259	354	323
f	Maximum power speed (min ⁻¹)	1800	1800	2100	1600
g	Maximum net power (kW)	444	271	354	325
h	Max. Torque Speed (rpm)	1400	1300	1400	1400
i	Fuel del. per stroke @ max. torque (mm3)	398	297	333	320
j	Max. Torque (Nm)	2719	1964	2171	2056
k	Low Idle Speed (rpm)	700	700	700	900
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	RM500 (4)	IND (5)	IND (5A)	IND (5B)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 2530616	Part no. 2530616	Part no. 2530616	Part no. 2530616
3.2.1.3	Fuel Delivery:				
a	rated mm3	288	281	281	281
b	rated rpm	2000	2100	2100	2100
c	pk tq mm3	351	368	368	368
d	pk tq rpm	1400	1400	1400	1400
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 2530616	Part no. 2530616	Part no. 2530616	Part no. 2530616
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 2197188	Electronics group part no. 3670749	Electronics group part no. 3819594	Electronics group part no. 4878734
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	2000 ± 10	2100 ± 10	2100 ± 10	2100 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2200 ± 10	2310 ± 10	2310 ± 10	2310 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	1100	700	700	700
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):		NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	1695	1696	13139	39916
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	2000	2100	2100	2100
d	Fuel del. per stroke @ rated (mm3)	288	281	281	281
e	Rated Net Power (kW)	403	403	403	403
f	Maximum power speed (min ⁻¹)	2000	2100	2100	2100
g	Maximum net power (kW)	403	403	403	403
h	Max. Torque Speed (rpm)	1400	1400	1400	1400
i	Fuel del. per stroke @ max. torque (mm3)	351	368	368	368
j	Max. Torque (Nm)	2355	2464	2464	2464
k	Low Idle Speed (rpm)	1100	700	700	700
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	IND (5C)	IND (6)	IND (6A)	IND (6B)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 5104139	Part no. 2530616	Part no. 2530616	Part no. 5104139
3.2.1.3	Fuel Delivery:				
a	rated mm3	281	309	309	309
b	rated rpm	2100	2100	2100	2100
c	pk tq mm3	368	389	389	389
d	pk tq rpm	1400	1400	1400	1400
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 5104139	Part no. 2530616	Part no. 2530616	Part no. 5104139
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 5058744	Electronics group part no. 3670749	Electronics group part no. 3819594	Electronics group part no. 5058744
3.2.4.3	Spd. where cut-off st. und. full lld (rpm) ⁽¹⁾ :	2100 ± 10	2100 ± 10	2100 ± 10	2100 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2310 ± 10	2310 ± 10	2310 ± 10	2310 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	700	700	700	700
3.3	Cold Start System⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	48880	1697	13140	48905
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	2100	2100	2100	2100
d	Fuel del. per stroke @ rated (mm3)	281	309	309	309
e	Rated Net Power (kW)	403	432.5	432.5	432.5
f	Maximum power speed (min ⁻¹)	2100	2100	2100	2100
g	Maximum net power (kW)	403	432.5	432.5	432.5
h	Max. Torque Speed (rpm)	1400	1400	1400	1400
i	Fuel del. per stroke @ max. torque (mm3)	368	389	389	389
j	Max. Torque (Nm)	2464	2649	2649	2649
k	Low Idle Speed (rpm)	700	700	700	700
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	IND (7)	IND (7A)	IND (7B)	824/5/6H (8)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 2530616	Part no. 2530616	Part no. 5104139	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	rated mm3	318	318	318	235
b	rated rpm	2100	2100	2100	1800
c	pk tq mm3	398	398	398	290
d	pk tq rpm	1400	1400	1400	1250
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 2530616	Part no. 2530616	Part no. 5104139	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 3670749	Electronics group part no. 3819594	Electronics group part no. 5058744	Electronics group part no. 2264733
3.2.4.3	Spd. where cut-off st. und. full lld (rpm) ⁽¹⁾ :	2100 ± 10	2100 ± 10	2100 ± 10	1800 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2310 ± 10	2310 ± 10	2310 ± 10	2200 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	700	700	700	800
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	1698	13141	48918	1699
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	2100	2100	2100	1800
d	Fuel del. per stroke @ rated (mm3)	318	318	318	235
e	Rated Net Power (kW)	444	444	444	299
f	Maximum power speed (min ⁻¹)	2100	2100	2100	1800
g	Maximum net power (kW)	444	444	444	299
h	Max. Torque Speed (rpm)	1400	1400	1400	1250
i	Fuel del. per stroke @ max. torque (mm3)	398	398	398	290
j	Max. Torque (Nm)	2719	2719	2719	1881
k	Low Idle Speed (rpm)	700	700	700	800
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	824/5/6H (9)	735 (10)	735 (11)	735 (12)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	rated mm3	219	220	247	232
b	rated rpm	1800	1900	1700	1700
c	pk tq mm3	278	304	336	311
d	pk tq rpm	1250	1200	1200	1200
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 2264733	Electronics group part no. 2331771	Electronics group part no. 2331771	Electronics group part no. 2331771
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1800 ± 10	1900 ± 10	1700 ± 10	1700 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2200 ± 10	2105 ± 10	2105 ± 10	2105 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	800	700	700	700
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	1700	1701	1702	1703
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	1900	1700	1700
d	Fuel del. per stroke @ rated (mm3)	219	220	247	232
e	Rated Net Power (kW)	280	299	304	289.5
f	Maximum power speed (min ⁻¹)	1800	1900	1700	1700
g	Maximum net power (kW)	280	299	304	289.5
h	Max. Torque Speed (rpm)	1250	1200	1200	1200
i	Fuel del. per stroke @ max. torque (mm3)	278	304	336	311
j	Max. Torque (Nm)	1836	1950	2155	2050
k	Low Idle Speed (rpm)	800	700	700	700
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	735 (13)	627G (14)	627G (15)	980H (16)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	rated mm3	221	231	210	210
b	rated rpm	1700	1800	1800	1800
c	pk tq mm3	299	308	269	273
d	pk tq rpm	1200	1200	1200	1200
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 2331771	Electronics group part no. 2271396	Electronics group part no. 2271396	Electronics group part no. 2268790
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1700 ± 10	1800 ± 10	1800 ± 10	1800 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2105 ± 10	2100 ± 10	2100 ± 10	2200 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	700	700	700	800
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	1704	1705	1706	1707
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1700	1800	1800	1800
d	Fuel del. per stroke @ rated (mm3)	221	231	210	210
e	Rated Net Power (kW)	275	294	268	264
f	Maximum power speed (min ⁻¹)	1700	1800	1800	1900
g	Maximum net power (kW)	275	294	268	270
h	Max. Torque Speed (rpm)	1200	1200	1200	1200
i	Fuel del. per stroke @ max. torque (mm3)	299	308	269	273
j	Max. Torque (Nm)	1945	2031	1744	1742
k	Low Idle Speed (rpm)	700	700	700	800
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	980H (17)	D8T (18)	IND (19)	IND (20)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	rated mm3	194	207	239	244
b	rated rpm	1800	1850	2100	2100
c	pk tq mm3	258	297	314	342
d	pk tq rpm	1200	1300	1400	1400
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 2268790	Electronics group part no. 2535149	Electronics group part no. 3674105	Electronics group part no. 3290339
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1800 ± 10	1850 ± 10	2100 ± 10	2100 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2200 ± 10	2070 ± 10	2310 ± 10	2270 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	800	700	700	1000
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	1708	1709	1711	1712
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	1850	2100	2100
d	Fuel del. per stroke @ rated (mm3)	194	207	239	244
e	Rated Net Power (kW)	247	259	328	353.5
f	Maximum power speed (min ⁻¹)	1900	1800	2100	2100
g	Maximum net power (kW)	270	271	328	353.5
h	Max. Torque Speed (rpm)	1200	1300	1400	1400
i	Fuel del. per stroke @ max. torque (mm3)	258	297	314	342
j	Max. Torque (Nm)	1671	1964	2010	2284
k	Low Idle Speed (rpm)	800	700	700	1000
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	583T (21)	657G (22)	657G (23)	587T (24)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	rated mm3	200	280	258	231
b	rated rpm	1850	1800	1800	1800
c	pk tq mm3	297	322	295	308
d	pk tq rpm	1300	1300	1300	1200
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 2717411	Electronics group part no. 2352804	Electronics group part no. 2352804	Electronics group part no. 2628066
3.2.4.3	Spd. where cut-off st. und. full lld (rpm) ⁽¹⁾ :	1850 ± 10	1800 ± 10	1800 ± 10	1800 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2200 ± 10	2225 ± 10	2225 ± 10	2200 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	700	750	750	700
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	1714	1724	1725	1735
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1850	1800	1800	1800
d	Fuel del. per stroke @ rated (mm3)	200	280	258	231
e	Rated Net Power (kW)	259	356.5	326	294
f	Maximum power speed (min ⁻¹)	1700	1900	1900	1700
g	Maximum net power (kW)	270	356.5	356	294
h	Max. Torque Speed (rpm)	1300	1300	1300	1200
i	Fuel del. per stroke @ max. torque (mm3)	297	322	295	308
j	Max. Torque (Nm)	1964	2157	1968	2031
k	Low Idle Speed (rpm)	700	750	750	700
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	980H (25)	980H (26)	980H (27)	980H (28)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	rated mm3	207	233	213	214
b	rated rpm	1800	1800	1800	1800
c	pk tq mm3	266	272	265	267
d	pk tq rpm	1200	1200	1200	1200
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 2822075	Electronics group part no. 2844294	Electronics group part no. 2844294	Electronics group part no. 2844294
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1800 ± 10	1800 ± 10	1800 ± 10	1800 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2200 ± 10	2200 ± 10	2200 ± 10	2200 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	800	800	800	800
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	1736	1739	1740	1741
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	1800	1800	1800
d	Fuel del. per stroke @ rated (mm3)	207	233	213	214
e	Rated Net Power (kW)	264	293	270	270
f	Maximum power speed (min ⁻¹)	1800	1900	1900	1900
g	Maximum net power (kW)	264	293	270	270
h	Max. Torque Speed (rpm)	1200	1200	1200	1200
i	Fuel del. per stroke @ max. torque (mm3)	266	272	265	267
j	Max. Torque (Nm)	1742	1803	1738	1740
k	Low Idle Speed (rpm)	800	800	800	800
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	980H (29)	IND (30)	IND (31)	365D (32)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 2800574	Part no. 2800574	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	rated mm3	201	230	213	297
b	rated rpm	1800	2100	2100	1800
c	pk tq mm3	258	317	300	338
d	pk tq rpm	1200	1400	1400	1350
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 2800574	Part no. 2800574	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 2844294	Electronics group part no. 3290337	Electronics group part no. 3290335	Electronics group part no. 2922234
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1800 ± 10	2100 ± 10	2100 ± 10	1800 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2200 ± 10	2310 ± 10	2270 ± 10	1980 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	800	1000	1000	900
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	1742	1743	1745	10869
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	2100	2100	1800
d	Fuel del. per stroke @ rated (mm3)	201	230	213	297
e	Rated Net Power (kW)	248	330	307	382
f	Maximum power speed (min ⁻¹)	1800	2100	1900	1800
g	Maximum net power (kW)	248	330	332	382
h	Max. Torque Speed (rpm)	1200	1400	1400	1350
i	Fuel del. per stroke @ max. torque (mm3)	258	317	300	338
j	Max. Torque (Nm)	1675	2134	1986	2211
k	Low Idle Speed (rpm)	800	1000	1000	900
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	365D (33)	980H (34)	980H (35)	980H (36)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	Rated mm3	249	251	233	233
b	Rated rpm	1800	1800	1800	1800
c	pk tq mm3	312	282	272	272
d	pk tq rpm	1400	1200	1200	1200
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 2922234	Electronics group part no. 3206137	Electronics group part no. 3206137	Electronics group part no. 3206137
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1800 ± 10	1800 ± 10	1800 ± 10	1800 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	1980 ± 10	2200 ± 10	2200 ± 10	2200 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	900	800	800	800
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	1748	10849	10850	11097
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	1800	1800	1800
d	Fuel del. per stroke @ rated (mm3)	249	251	233	233
e	Rated Net Power (kW)	323	293	270	270
f	Maximum power speed (min ⁻¹)	1800	1800	1800	1800
g	Maximum net power (kW)	323	297	270	270
h	Max. Torque Speed (rpm)	1400	1200	1200	1200
i	Fuel del. per stroke @ max. torque (mm3)	312	282	272	272
j	Max. Torque (Nm)	2056	1803	1738	1738
k	Low Idle Speed (rpm)	900	800	800	800
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	980H (37)	740 (38)	740 (39)	770 (40)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	Rated mm3	217	269	281	295
b	Rated rpm	1800	1800	1700	1800
c	pk tq mm3	262	356	360	345
d	pk tq rpm	1200	1200	1200	1300
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 3206137	Electronics group part no. 3209656	Electronics group part no. 3209656	Electronics group part no. 3309714
3.2.4.3	Spd. where cut-off st. und. full lld (rpm) ⁽¹⁾ :	1800 ± 10	1800 ± 10	1700 ± 10	1800 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2200 ± 10	2105 ± 10	2105 ± 10	2200 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	800	700	700	650
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	11098	11095	11094	11382
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	1800	1700	1800
d	Fuel del. per stroke @ rated (mm3)	217	269	281	295
e	Rated Net Power (kW)	248	350	341	381
f	Maximum power speed (min ⁻¹)	1800	1800	1700	1800
g	Maximum net power (kW)	248	350	341	381
h	Max. Torque Speed (rpm)	1200	1200	1200	1300
i	Fuel del. per stroke @ max. torque (mm3)	262	356	360	345
j	Max. Torque (Nm)	1675	2412	2412	2320
k	Low Idle Speed (rpm)	800	700	700	650
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	770 (41)	735 (42)	IND (43)	PL83 (44)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 2530616	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	rated mm3	271	254	318	200
b	rated rpm	1800	1800	2100	1850
c	pk tq mm3	310	327	395	302
d	pk tq rpm	1300	1350	1400	1300
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 2530616	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 3309714	Electronics group part no. 3436116	Electronics group part no. 3684584	Electronics group part no. 3699510
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1800 ± 10	1800 ± 10	2100 ± 10	1850 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2200 ± 10	2105 ± 10	2310 ± 10	2200 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	650	700	700	700
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	11383	11430	11674	11901
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	1800	2100	1850
d	Fuel del. per stroke @ rated (mm3)	271	254	318	318
e	Rated Net Power (kW)	343	325	432.5	259
f	Maximum power speed (min ⁻¹)	1800	1800	2100	1800
g	Maximum net power (kW)	343	325	433	271
h	Max. Torque Speed (rpm)	1300	1350	1400	1300
i	Fuel del. per stroke @ max. torque (mm3)	310	327	395	302
j	Max. Torque (Nm)	2084	2290	2596	1964
k	Low Idle Speed (rpm)	650	700	700	700
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	PL87 (45)	R2900 (46)	R2900 (47)	R2900 (48)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.1.3	Fuel Delivery:				
a	rated mm3	231	245	240	261
b	rated rpm	1800	1900	1900	1800
c	pk tq mm3	308	315	272	269
d	pk tq rpm	1200	1425	1425	1350
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 3740750	Part no. 3740750
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 3699517	Electronics group part no. 2502824	Electronics group part no. 2502824	Electronics group part no. 2502824
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1800 ± 10	1900 ± 10	1900 ± 10	1800 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2200 ± 10	2120 ± 10	2120 ± 10	2120 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	700	800 ± 10	800 ± 10	800 ± 10
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	11902	1733	1690	1689
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	1900	1900	1800
d	Fuel del. per stroke @ rated (mm3)	318	245	240	261
e	Rated Net Power (kW)	294	325	321	333
f	Maximum power speed (min ⁻¹)	1800	1900	1900	1800
g	Maximum net power (kW)	294	325	321	333
h	Max. Torque Speed (rpm)	1200	1425	1425	1350
i	Fuel del. per stroke @ max. torque (mm3)	308	315	272	269
j	Max. Torque (Nm)	2031	2085	1792	1770
k	Low Idle Speed (rpm)	700	800	800	800
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	AD30 (49)	R3000 (50)	374F (51)	RM500B (52)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 2530616	Part no. 2530616
3.2.1.3	Fuel Delivery:				
a	rated mm3	238	238	313	288
b	rated rpm	1800	1800	1600	2000
c	pk tq mm3	318	318	339	352
d	pk tq rpm	1200	1200	1400	1400
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 3740750	Part no. 2530616	Part no. 2530616
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 2502815	Electronics group part no. 3874564	Electronics group part no. 4237012	Electronics group part no. 4451989
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1800 ± 10	1800 ± 10	1600 ± 10	2000 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2330 ± 10	2120 ± 10	1800 ± 10	2200 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	700 ± 10	800 ± 10	800 ± 10	1100 ± 10
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	1710	12109	13885	20519
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	1800	1600	2000
d	Fuel del. per stroke @ rated (mm3)	238	238	313	288
e	Rated Net Power (kW)	305	305	366	403
f	Maximum power speed (min ⁻¹)	1800	1800	1600	2000
g	Maximum net power (kW)	305	305	366	403
h	Max. Torque Speed (rpm)	1200	1200	1400	1400
i	Fuel del. per stroke @ max. torque (mm3)	318	318	339	352
j	Max. Torque (Nm)	2117	2117	2387	2355
k	Low Idle Speed (rpm)	700	800	800	1100
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	820K (53)	735C (54)	986H (55)	PL83 / PL87 (56)
3.2	Injection system				
3.2.1	Pump				
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 2530616	Part no. 3556110	Part no. 3556110	Part no. 3556110
3.2.1.3	Fuel Delivery:				
a	rated mm3	255	277	284	207
b	rated rpm	1800	1800	1800	1850
c	pk tq mm3	313	337	350	280
d	pk tq rpm	1300	1350	1350	1300
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine	On engine	On engine
3.2.1.4	Injection advance				
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic	Electronic	Electronic
3.2.2	Injection piping				
3.2.2.1	Length (mm):	NA	NA	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA	NA	NA
3.2.3	Injector(s)				
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 2530616	Part no. 3556110	Part no. 3556110	Part no. 3556110
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor				
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 4155659	Electronics group part no. 3903820	Electronics group part no. 4804803	Electronics group part no. 4597538
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1800 ± 10	1800 ± 10	1800 ± 10	1850 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2300 ± 10	2100 ± 10	2165 ± 10	2200 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	800 ± 10	700 ± 10	850 ± 10	700 ± 10
3.3	Cold Start System ⁽³⁾				
3.3.1	Make(s):	NA	NA	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing				
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:				
1.1	Combustion cycle:	4 stroke	4 stroke	4 stroke	4 stroke
1.2	Cooling medium:	water	water	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems				
	Prf. of ident. pursuant to dr. #'s:				
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA	NA	NA
1.7.4	Air injection ¹ :	NA	NA	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:				
2.	Engine Family Listing				
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:				
a	Engine Type	14789	13006	39845	32168
b	No. of cylinders	6	6	6	6
c	Rated Speed (rpm)	1800	1800	1800	1850
d	Fuel del. per stroke @ rated (mm3)	255	277	284	207
e	Rated Net Power (kW)	318	335	335	263
f	Maximum power speed (min ⁻¹)	1800	1600	1600	1600
g	Maximum net power (kW)	318	338	338	273
h	Max. Torque Speed (rpm)	1300	1350	1350	1300
i	Fuel del. per stroke @ max. torque (mm3)	313	337	350	280
j	Max. Torque (Nm)	2160	2320	2320	1966
k	Low Idle Speed (rpm)	800	700	850	700
l	Cylin. displ. (in % of parent eng.)	100%	100%	100%	100%



1.	Descrip. of engine	770G (57)	IND (58)
3.2	Injection system		
3.2.1	Pump		
3.2.1.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.
3.2.1.2	Type(s):	Part no. 3740750	Part no. 4666771
3.2.1.3	Fuel Delivery:		
a	rated mm3	293	270
b	rated rpm	1800	1800
c	pk tq mm3	339	327
d	pk tq rpm	1300	1400
e	On eng./on pump bench ⁽²⁾ :	On engine	On engine
3.2.1.4	Injection advance		
3.2.1.4.1	Injec. adv. curve ⁽¹⁾ :	Electronic	Electronic
3.2.1.4.2	Timing ⁽¹⁾ :	Electronic	Electronic
3.2.2	Injection piping		
3.2.2.1	Length (mm):	NA	NA
3.2.2.2	Internal diam. (mm):	NA	NA
3.2.3	Injector(s)		
3.2.3.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.
3.2.3.2	Type(s):	Part no. 3740750	Part no. 4666771
3.2.3.3	Opening press. ⁽¹⁾ or charac. diag. (kPa):	37,921 ± 2,100 kPa	37,921 ± 2,100 kPa
3.2.4	Governor		
3.2.4.1	Make(s):	Caterpillar Inc.	Caterpillar Inc.
3.2.4.2	Type(s):	Electronics group part no. 3661377	Electronics group part no. 4744132
3.2.4.3	Spd. where cut-off st. und. full ld (rpm) ⁽¹⁾ :	1800 ± 10	1800 ± 10
3.2.4.4	Maximum no-load speed (rpm) ⁽¹⁾ :	2200 ± 10	2310 ± 10
3.2.4.5	Idling speed (rpm) ⁽¹⁾ :	650 ± 10	700 ± 10
3.3	Cold Start System⁽³⁾		
3.3.1	Make(s):	NA	NA
3.3.2	Type (s):	Ether Aid	Ether Aid
3.3.3	Description:	Ether injection into the intake manifold	Ether injection into the intake manifold
4.	Valve Timing		
4.1	Max. lift and angl in dead cntrs or eq. data:	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)	15.6 mm Max. Intake Lift; 13.7 mm Max. Exhaust Lift (Cold Lash)
4.2	Reference and/or setting ranges ⁽²⁾ :	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC	Intake Opening: 324.4 deg. ATDC Intake Closing: 564.0 deg. ATDC Exhaust Opening: 121.2 deg. ATDC Exhaust Closing: 372.2 deg. ATDC

⁽¹⁾ - Specify the tolerance.

⁽²⁾ - Strike out what does not apply

⁽³⁾ Cold start aids:

Appendix 2 - ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1.	Common parameters:		
1.1	Combustion cycle:	4 stroke	4 stroke
1.2	Cooling medium:	water	water
1.3	Method of air aspir:	Turbocharged air to air aftercooled	Turbocharged air to air aftercooled
1.4	Comb. cham. type/des.	Quiescent - Bullet Nose Crater	Quiescent - Bullet Nose Crater
1.5	Valve and porting-config., size, and num.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.	crossflow, 2 intake & 2 exhaust valves/cylinder Intake valve: 47.0 mm dia. Exhaust valve: 41.81 mm dia. Intake port: 41.0 mm dia. Exhaust port 36.5 mm dia.
1.6	Fuel system	Direct Injection	Direct Injection
1.7	Eng. Manag. Systems		
	Prf. of ident. pursuant to dr. #'s:		
1.7.1	Chrg. cooling system:	Supplied by OEM	Supplied by OEM
1.7.2	Exst. gas recirc. ¹ :	Caterpillar Inc.	Caterpillar Inc.
1.7.3	Water inj./emul. ¹ :	NA	NA
1.7.4	Air injection ¹ :	NA	NA
1.8	Exhaust. after-treatment system ¹ :	Caterpillar Inc.	Caterpillar Inc.
	Prf. of ident. ratio:		
2.	Engine Family Listing		
2.1	Name of engine family:	CPXL15.2ESW	CPXL15.2ESW
2.2	Spec. of eng. in fam:		
a	Engine Type	11851	29899
b	No. of cylinders	6	6
c	Rated Speed (rpm)	1800	1800
d	Fuel del. per stroke @ rated (mm3)	293	270
e	Rated Net Power (kW)	381	354
f	Maximum power speed (min ⁻¹)	1800	1800
g	Maximum net power (kW)	381	354
h	Max. Torque Speed (rpm)	1300	1400
i	Fuel del. per stroke @ max. torque (mm3)	339	327
j	Max. Torque (Nm)	2320	2171
k	Low Idle Speed (rpm)	650	700
l	Cylin. displ. (in % of parent eng.)	100%	100%

